

222/385

NOV 1976

PATENT SPECIFICATION (11)

1 455 104

1 455 104

- (21) Application No. 23381/75 (22) Filed 29 May 1975 (19)
 (31) Convention Application Nos. 476 039 (32) Filed 3 June 1974
 509 485 26 Sept. 1974 in
 (33) United States of America (US)
 (44) Complete Specification published 10 Nov. 1976
 (51) INT. CL.³ F04B 9/14 23/02
 (52) Index at acceptance
 FIA ICI 3AIB 4C 4H 4Q
 (72) Inventor WOLF STEIMAN



3/1
222
GREAT BRITAIN
GROUP 3.53
CLASS. 4.1.1
RECORDED

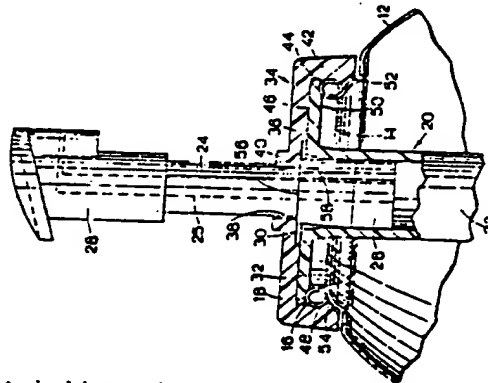
(54) HAND-HELD PUMP-TYPE DISPENSERS

(71)
 DEVELOPM
 pany of 1
 bourg, Sw
 invention,
 may be gr
 which it i
 cularly de
 statement:
 This inv
 penser of
 dispensing
 pump, the
 which the
 surised Suc
 alternative
 penser con
 employing
 pellant and
 In the ki
 the pump
 cap which
 neck form
 tainer. Th
 to provide
 but avoidi
 and troubl
 kind of m

According to the invention there is pro
 posed a hand-held pump-type dispenser
 comprising a container with a neck at its
 upper end defining an opening having a
 smooth circumferentially continuous rim or
 bead around it, and a reciprocating plunger
 pump mounted in that opening by means of
 a downwardly open inverted mounting cup
 having a central opening through which the
 reciprocating plunger protrudes and having
 a horizontal top wall which traps, against
 the upper face of the rim or bead on the
 neck of the container, an outwardly sub
 stantially horizontally directed flange on the
 body of the pump, and the cup having a
 downwardly directed skirt which fits around
 the rim or bead on the container neck and
 has an inwardly directed lip that engages
 under that rim or bead, the cup being made
 of resilient plastics material whereby it can

AERL +P42 =N4569W/51 =GB 1455-104
 Hand operated dispenser with pump - has container with snap on
 closure for pump cylinder through which plunger moves

AEROSOL INV & DEV 26.09.74-US-509485 (03.06.74-US-476039)
 Q33 +Q56 R13 (10.11.76) *DT2524-290 +F04b-09/14 F04b-23/02
 The hand held pump dispenser has a container (12) with
 an upper opening having a smooth circumferentially con
 tinuous rim (18). A reciprocating plunger pump is moun
 ted in the ope
 ning by a down
 wards open in
 verted mount
 ing cup (34) with
 a centre open
 ing for the reci
 procating plun
 ger (24) and with a
 top face which
 traps against
 the upper face
 of the rim an
 outwardly direct
 ed flange (32) on
 the pump body.
 The cup has a
 downwards dir
 ected skirt and an inwards directed lip to engage under
 the rim. The cup is of resilient plastics material, being
 assembled onto the container by snap engagement to form
 a permanent housing. 29.5.75 as 023381 (6pp)



ected skirt and an inwards directed lip to engage under
 the rim. The cup is of resilient plastics material, being
 assembled onto the container by snap engagement to form
 a permanent housing. 29.5.75 as 023381 (6pp)

container, especially glass bottles.

The invention will now be further des
 cribed by way of example with reference to
 the accompanying drawings, in which:—

Figure 1 is a partly sectioned elevation
 of the upper part of a first embodiment of
 a dispenser according to the invention;

Figure 2 is a plan view of the mounting
 cup of the dispenser of Figure 1;

Figure 3 is an inverted plan view of the
 same cup;

Figure 4 is a detail section, to a larger
 scale, showing the manner of engagement
 of the parts in the dispenser of Figure 1;

Figure 5 is a view similar to Figure 1,
 showing a second embodiment;

Figure 6 is a plan view of the mounting
 cup of the dispenser of Figure 5; and

Figure 7 is an inverted plan view of the
 same cup.

ment onto the 50
 a permanent

but optional,
 skirt on the cup
 y directed lip 55
 ment with the
 pump so that
 the cup before
 container.
 inserted between 60
 and the rim or

optional feature
 the cup extends 65
 least equal to
 from the top
 the lip. This
 ant strength to
 or cracking as
 rim or bead on 70

y of value in
 ted easily and
 n of the kind
 is to say, with 75
 so-called curl
 neck. However
 other forms of

80

85

90

95

STARK
+P42 P74
=48903V/27 =GB 1455-289
Photo-polymerizable coating applicator for screen template - for
subsequent use in rotary screen printing
STORK AMSTERDAM BV 15.12.72-NL-017165
G01+R2 (10.11.76)-D12359-088 +B05C-03/20
Liquid coating of the exterior of a vertical perforated
cylindrical stencil, particularly for rotary screen printing

NOV 1976

1 455 104



GREAT BRITAIN
GROUP 353
CLASS. 43
RECORDED

1 455 104

- (21) Appli
- (31) Conv
- (33) Unite
- (44) Com
- (51) INT.
- (52) Inde
- Fl
- (72) Inve

Ag cpl soln, and PdCl₂ soln to deposit an activated film
(b) soaking the substrate in an electrolytic plating bath
contg. Co (0.16-0.038 g/l) and Ni salts, hypophosph-
ite reducing agent (0.28-0.47 mol/l) and citrate (0.34-0.
74 mol/l) molar ratio Co:Ni (1) or tartrate (0.04-0.
22 mol/l) complexing agents, ratio Co:Ni (8-10) being
6-15:1, pH of the bath being 9.5-10.5, and temp being
20-50°C; (c) heat treating the resulting Co-Ni film in a
nonoxidizing atmos at >230°C for a time such that time
(hrs) x temp (°C) ≥ 1000; and (d) surface treating the
film by heating in an oxidizing atmos at >150°C for a
time such that time (hrs) x temp (°C) ≥ 200. Used for
making prodn of metal film resistors having well balanced
resistance properties. 26.4.74 as 018413 (8pp)

(71) We, AEROSOL INVENTIONS & DEVELOPMENT S.A. AIDS, a Swiss company of 1 Rue de Fries, CH-1700 Fribourg, Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
This invention relates to a hand-held dispenser of the kind used, for example, for dispensing household products or perfumes and employing a manually operated piston pump, the contents of the container on which the pump is mounted being unpressurised. Such pump type dispensers offer an alternative to the pressurised type of dispenser commonly known as an aerosol can, employing a fluorocarbon or other propellant and controlled by a valve.
In the known dispensers of the pump type the pump assembly is mounted in a screw cap which is received by a screw-threaded neck formed on the upper end of the container. The aim of the present invention is to provide a dispenser employing a pump but avoiding the high manufacturing costs and trouble of assembly associated with that kind of mounting.
According to the invention there is proposed a hand-held pump-type dispenser comprising a container with a neck at its upper end defining an opening having a smooth circumferentially continuous rim or bead around it, and a reciprocating plunger pump mounted in that opening by means of a downwardly open inverter mounting cup having a central opening through which the reciprocating plunger protrudes and having a horizontal top wall which traps, against the upper face of the rim or bead on the neck of the container, an outwardly substantially horizontally directed flange on the body of the pump, and the cup having a downwardly directed skirt which fits around the rim or bead on the container neck and has an inwardly directed lip that engages under that rim or bead, the cup being made of resilient plastics material whereby it can

be assembled by snap engagement onto the neck of the container to form a permanent mounting for the pump.

According to a further, but optional, feature of the invention the skirt on the cup may have a further inwardly directed lip by which it has a snap engagement with the periphery of the flange on the pump so that the pump can be mounted in the cup before the cup is snapped onto the container.

A sealing gasket may be inserted between the flange on the pump body and the rim or bead on the container neck.

According to a further optional feature of the invention the skirt of the cup extends below the lip by a distance at least equal to its depth above the lip, i.e. from the top horizontal surface down to the lip. This helps to give the skirt sufficient strength to avoid any danger of splitting or cracking as the cup is snapped over the rim or bead on the container neck.

The invention is primarily of value in allowing a pump to be mounted easily and cheaply on a sheet metal can of the kind widely used for aerosols, that is to say, with a rolled over portion or so-called curl around the opening in the neck. However it may also be applied to other forms of container, especially glass bottles.

The invention will now be further described by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a partly sectioned elevation of the upper part of a first embodiment of a dispenser according to the invention;

Figure 2 is a plan view of the mounting cup of the dispenser of Figure 1;

Figure 3 is an inverted plan view of the same cup;

Figure 4 is a detail section, to a larger scale, showing the manner of engagement of the parts in the dispenser of Figure 1;

Figure 5 is a view similar to Figure 1, showing a second embodiment;

Figure 6 is a plan view of the mounting cup of the dispenser of Figure 5; and

Figure 7 is an inverted plan view of the same cup.

Referring first to Figures 1 to 4, a sheet metal can 12 of a kind known for use in pressurised dispensers, such as aerosol cans, has a circular top opening 14 surrounded by an outwardly rolled sheet metal rim 16 known as a curl, forming an annular bead 18. A pump assembly 20, of known kind is mounted in this opening and comprises a cylinder or body 22 with a vertically reciprocating plunger 24 acting on a piston 26 to dispense the contents of the container 12 through a passage 25 in the plunger 24 on axial movement of the plunger by a hand-engaged button 28 at the top end of the plunger.

The components of the pump are moulded from plastics material and the cylinder or body 22 has at its upper end 30 an integral outwardly directed horizontal flange 32.

To mount the pump 20 on the container 12 we provide a snap-on mounting cup 34, moulded from synthetic resin, having a horizontal flat top wall 36 with a central opening 38 through which the plunger 24 of the pump projects. A collar 40 around the opening 38 reinforces the edge of the opening and also forms a guide for the plunger.

At its periphery the cup 34 has a downwardly extending skirt 42 with a first internal groove or undercut 44 immediately adjacent to the underside of the top wall 36 and of a shape and size such as to receive by snap engagement the periphery of the flange 32 on the pump. Immediately below the groove 44 the inner face of the skirt 42 has a frustoconically tapering entry portion 45 (see Fig. 4) to help the entry of the flange 32 by deflecting the skirt resiliently outwards as the two parts are snapped together. This is further assisted by the provision of a rounded edge 47 on the upper edge of the periphery of the flange 32. As will be seen in Figure 4 the lower edge of the groove 44 is horizontal and so once the parts have been snapped together it is almost impossible to separate them without destroying them. The flange 32 is held in intimate contact with mounting cup 34 both over the upper face of the flange and over its periphery.

In practice we have found that a high degree of strength and rigidity is obtained when the diameter of the mounting cup is about three times the diameter of the pump cylinder.

A second undercut or groove 48 in the skirt 42, below the first, is designed to snap over the curl 16 around the opening in the can 12. When the cup 34 is snapped into place on the can the bead 18 on the curl 16 presses tightly and in a fluid-tight manner against the underside 50 of the flange 32, so that the flange is trapped between the top

wall of the cup 34 and the curl on the can. A frustoconically tapering entry portion 52 on the lower part of the inner face of the skirt 42 facilitates the outward deflection of the skirt that is necessary during assembly and once the cup is in place it is firmly retained by a lip 54 engaging under the curl 16. The dimensions and characteristics of the synthetic resin material from which the cup 34 is moulded are chosen to be such that the cup is virtually impossible to remove from the can once it has been snapped into place, and it will hold the pump securely and in a fluid-tight manner, resisting all normal stresses that arise in handling and use.

The lip 54 has the added virtue of reinforcing the lower edge of the skirt 42 to resist any tendency for the skirt to split as the cup is forced into place or in its subsequent life. The natural tendency of synthetic resin materials is to shrink with time and in the case of the mounting cup 34 this will tend only to increase the tightness with which it seals the pump to the can.

It will be seen that the moulding represented by the mounting cup 34 has walls of relatively thin section, making it economical in material and easy to mould.

The assembly costs of the container described are low in that the assembled pump is first snapped into the mounting cup and then the mounting cup is snapped onto the container without any expensive screwing or crimping operations, and the act of mounting the cup on the container simultaneously seals the pump body directly to the container, i.e. the liquid contents of the container do not even reach the mounting cup itself.

The collar 40 on the mounting cup, as well as reinforcing the edge of the opening 38, has a useful function as a positive and rigid stop to limit the upward travel of the pump plunger 24 by engaging at 58 a shoulder 56 on the upper face of the piston 26 as shown in Figure 1.

In the embodiment shown in Figures 5 to 7 a container 60 in the form of a glass bottle has a neck with a rim 62 and an external annular bead 64 around the rim. A pump assembly 66 comprises a pump cylinder or body 68 with a plunger 70 actuating a piston 72 and carrying an actuating button 74 with an outlet orifice 76. The cylinder 68 has an integral outwardly directed flat horizontal mounting flange 78. The internal construction of the pump is shown but will not be described, being fully described in the specification of British Patent No. 1,051,552. It has a dip tube at its lower end to draw the liquid contents of the container 60 into the inlet of the pump.

The mounting cup in this embodiment is shown at 80 and again comprises a shallow

11

15

20

25

30

35

40

45

cc

inverted cup, with a horizontal flat top wall 32 having a central opening 84 for the pump plunger 70 and a downwardly extending peripheral skirt 85. An internal lip 86 on the inside face of the skirt 85 forms means for snap engagement under the bead 64 on the bottle neck and there is a frusto-conically tapering portion 88 below the lip to assist in stretching the lip elastically as the cup is fitted onto the bottle. The upper surface of the lip is horizontal, but with a slightly rounded edge. The mounting cup 80 clamps the pump 66 to the neck of the bottle by trapping the flange 78 against the rim 62, although in this case with the interposition of an annular synthetic resin or rubber sealing gasket 62.

The manner of assembly of the dispenser of Figures 5 to 7 is self-evident. It will be noted that the skirt 85 extends downwards at 94 below the lip 86 by a distance between the lip 86 and the top wall 82. The presence of this lower portion 94 of the skirt helps to ensure that the skirt does not split or crack in the region of the lip 86, especially during assembly onto the bottle but also during subsequent handling and use.

WHAT WE CLAIM IS:—

- 1 A hand-held pump-type dispenser comprising a container with a neck at its upper end defining an opening having a smooth circumferentially continuous rim or bead around it, and a reciprocating plunger pump mounted in that opening by means of a downwardly open inverted mounting cup having a central opening through which the reciprocating plunger protrudes and having a horizontal top wall which traps, against the upper face of the rim or bead on the neck of the container, an outwardly substantially horizontally directed flange on the body of the pump, and the cup having a downwardly directed skirt which fits around the rim or bead on the container neck and has an inwardly directed

lip that engages under that rim or bead, the cup being made of resilient plastics material whereby it can be assembled by snap engagement onto the neck of the container to form a permanent mounting for the pump.

2. A dispenser according to claim 1 in which the skirt of the mounting cup includes a second inwardly directed lip between the first lip and the top wall of the cup, this second lip serving to trap the outwardly directed flange on the body of the pump against the underside of the top wall of the cup even before assembly of the pump and mounting cup onto the container.

3. A dispenser according to claim 1 or claim 2 in which the mounting cup is substantially three times the diameter of the pump body.

4. A dispenser according to any one of claims 1 to 3 in which the skirt of the mounting cup has a frustoconically tapered entry portion below the first lip.

5. A dispenser according to claim 2 in which the skirt of the mounting cup has a frusto-conically tapered entry portion below the second lip.

6. A dispenser according to any one of claims 1 to 5 in which the skirt of the mounting cup extends below the lip, or the first-mentioned lip, by a distance at least equal to the distance of that lip from the top wall.

7. A hand-held pump-type dispenser substantially as described with reference to Figures 1 to 4 of the accompanying drawings.

8. A hand-held pump-type dispenser substantially as described with reference to Figures 5 to 7 of the accompanying drawings.

BARKER, BRETTELL & DUNCAN,
Chartered Patent Agents,
Agents for the Applicants,
138 Hagley Road, Edgbaston,
Birmingham B16 9PW.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1976.
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY
from which copies may be obtained.



FIG. 3.

1455104 COMPLETE SPECIFICATION

3 SHEETS

*This drawing is a reproduction of
the Original on a reduced scale*

Sheet 2

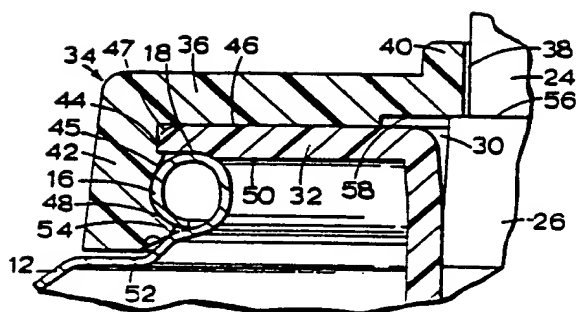


FIG. 4.

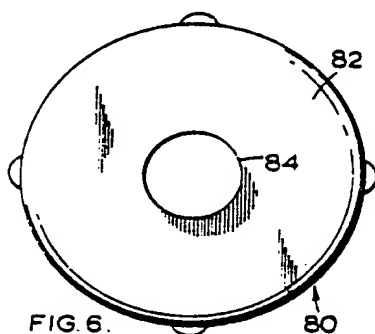


FIG. 6.

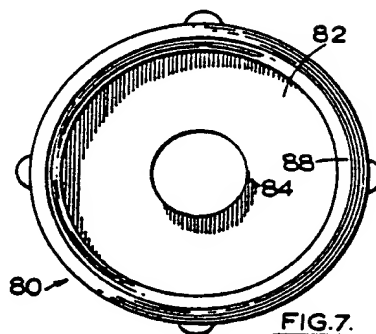


FIG. 7.

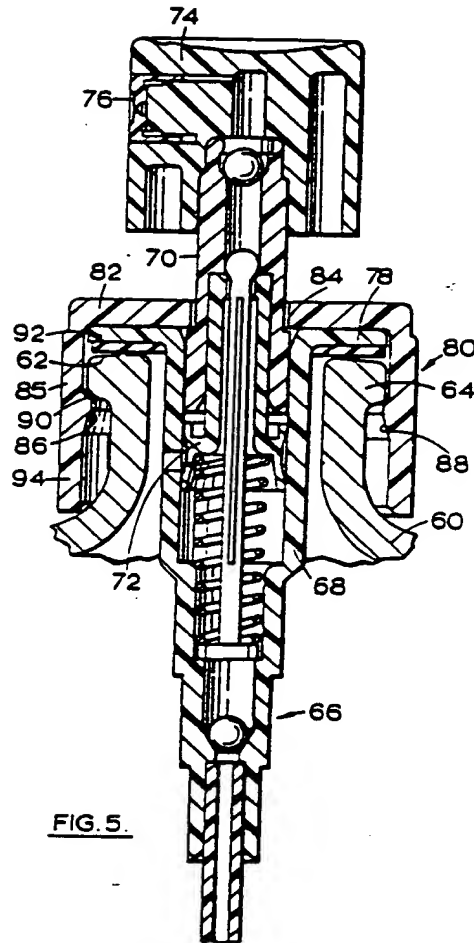


FIG. 5.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.